EDGAR (J.C.)

The Mechanism and Diagnosis of Vertex Presentation.

BY

J. CLIFTON EDGAR, M. D.,

Adjunct Professor of Obstetrics in the Medical Department of the University of the City of New York; Assistant Obstetric Surgeon to the New York Maternity Hospital; Obstetrician to the Emergency Lying-in-Hospital; Attending Physician to the New York Lying-in-Hospital.

REPRINTED FROM THE

New York Medical Journal

for February 25, 1893.

Reprinted from the New York Medical Journal
for February 25, 1893.

THE MECHANISM AND DIAGNOSIS OF VERTEX PRESENTATION.*

By J. CLIFTON EDGAR, M. D.,

ADJUNCT PROFESSOR OF OBSTETRICS IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE CITY OF NEW YORK;
ASSISTANT OBSTETRIC SURGEON TO THE NEW YORK MATERNITY HOSPITAL;
OBSTETRICIAN TO THE EMERGENCY LYING-IN HOSPITAL;
ATTENDING PHYSICIAN TO THE NEW YORK LYING-IN HOSPITAL.

If we are familiar with the three factors of labor—namely, the passages, the passenger, and the forces—we are in a position to appreciate that most interesting part of the subject of parturition: the manner or, better, the combination of movements by which Nature guides the fœtus from the uterine cavity through the pelvis into the external world. In the whole range of obstetric science and art there is perhaps no one subject more worthy of a careful, conscientious, and diligent study. There is no one subject upon which so much depends as regards the prognosis for both mother and child. If perchance one link in the chain of these movements going to make up the mechanism of labor fails, and we are unable, by reason of our ignorance of Nature's methods, to step in at the right moment and

* A lecture delivered at the University Medical College, December 6 and 8, 1892.

supply the deficiency, either mother or child is bound to suffer.

It is quite true that in our first ten or twelve cases of labor absolutely no interference may be called for in their management, but it is equally true that in our next series of ten or a dozen cases Nature may fail us in some particular; we are unable to appreciate the difficulty and to correct it, and untold disaster is the result. With equal success might we hope to appreciate and treat certain cardiac diseases without an understanding of the anatomy and physiology of the heart as to attempt the management of labor cases without a clear knowledge of the mechanism of parturition.

Before turning our attention to the mechanism of labor in vertex presentations, let us recall the statement of Pajot that "all labors, from a mechanical standpoint, are subject to the same law, and that there is really only one mechanism of labor, no matter what the presentation or position, . . . provided only that expulsion occurs spontaneously and at term, as abortions do not result in regular expulsion." We may state, then, to-day that there is but one mechanism of labor, no matter if the presentation is the vertex, the brow, the face, or the breech. A recent writer upon midwifery would compare the mechanism of labor in vertex presentation to a tune, the mechanism of labor in all other presentations being the same with variations. Further, we may state that, in the mechanism of labor in all presentations and positions, six stages may be described: 1. In the first stage the fœtus, pressed upon and influenced by the general intra-uterine pressure, and perhaps also to a slight extent by the voluntary efforts of the mother, tends to accommodate, to mold the shape of its presenting part to suit the canal through which it has to pass. 2. In the second stage this molded presentation engages and descends

into the pelvis. This stage, then, is the stage of engaging and descent. 3. Having molded, having engaged, having descended a certain distance—namely, to the pelvic floor—the presenting part executes a movement, so as to bring its long axis in correspondence with the longest diameter of the outlet of the pelvic canal. This is the third stage, or stage of internal rotation. 4. Again the presenting part executes a further movement by which it sets itself free from the genital canal. This is the fourth stage, or, as we may say, the stage of expulsion of the first part of the fœtus. 5. Again, as the result of the internal rotation of that portion of the child which is still within the birth canal, we have a rotation of that part which has already been delivered, and this is termed the stage of external rotation. 6. Then the sixth and last stage is a second period of expulsion, or the escape of that part of the fœtus heretofore unexpelled.

While these six stages in the mechanism of labor are not always absolutely the same for all presentations and for all positions of the fœtus; while we may have flexion in one instance, extension in another; while it may be the right shoulder that rotates to the front in one and the left in another; while the presentation may be face, brow, vertex, or breech, yet we shall be certain to encounter these stages in all labors, no matter what the presentation, no matter what the position.

Having thoroughly grasped these facts, then, let us turn immediately to the consideration of vertex presentation. The number of positions of the vertex described vary in different countries and according to different authorities. The English usually describe four positions; those American writers who follow the teachings of Hodge, on the other hand, would have us describe six positions; while the Germans, thinking both these classifications too complicated, describe usually but two positions. The simplest classifi-

cation is to speak of four positions, and we shall therefore adopt that; and this is more readily understood if we imagine that the pelvic inlet is divided into four quadrants by the antero posterior and transverse diameters, and that the positions vary according as the vertex occupies one or other of these four quadrants. And just here let us remember that by the right oblique diameter we mean the one passing through the right sacro-iliac synchondrosis, and by the left the one passing through the left sacro-iliac joint.

The four positions of the vertex, then, are: 1. The first or left occipito-anterior position. 2. The second or right occipito-anterior position. 3. The third or right occipito-posterior position. 4. The fourth or left occipito-posterior position. And, as regards the relative frequency of these several positions, it is to day pretty well agreed by authorities upon the subject that the first position obtains in from sixty-five to eighty per cent. of cases, and that the third, second, and fourth positions are the next most frequent in the order named.

We shall first describe the mechanism of labor in the first or left occipito-anterior position, and then in the third, the next most frequent, or the right occipito-posterior position of the vertex.

In the first stage, the mechanism that we have to describe is one of flexion and molding, and we can readily comprehend how flexion is brought about when we hold up a fœtal cadaver, and we immediately perceive that the forehead, or the long end of the lever made by the head upon the spinal column, falls, by reason of its own weight, upon the chest of the fœtus; consequently, when the force of uterine contraction acts upon the head through the spinal column, the short end, or the occipital extremity of the head, is more directly in the line of action of this force, and consequently tends to be driven farther downward in the birth canal, and hence

flexion of the child's chin upon its sternum is produced. We have every reason to believe, however, that flexion is in many cases complete before labor actually sets in, for we know that the normal attitude or posture of the child within the uterus is one of flexion, and we can recall, from our observations of labor cases in the New York Lying-in Hospital, how the child's posture, immediately after its expulsion from the birth canal, was often one of flexion between the thighs of its mother. Even in the absence of uterine contraction, flexion may be brought about by this tendency on the part of the child to take up this particular attitude, and also by a principle of mechanics that is termed a couplet, which latter we will pass over for the present. Molding, then, and flexion constitute the first stage in the mechanism.

Recalling our general principles, the next stage will be one of engagement and gradual descent; and, as in all mechanisms of labor, one great principle—namely, accommodation or adaptation—plays a prominent part, consequently the long diameter of the head would tend to enter the pelvic inlet in its longest diameter, which is, as we know, the transverse; and Spiegelberg has shown that the head does in vertex presentation enter the transverse diameter of the pelvic inlet in 81·4 per cent. of all cases. So far it has been all very simple; there is nothing that any one of us can not readily understand and comprehend; but we come now to the third stage in the mechanism—namely, the internal rotation of the first part, or, in this case, the head.

Perhaps there is no part of the mechanism of labor that has caused the student such difficulty and concerning which there has been such difference of opinion as the cause of this internal rotation, whether it be the internal rotation of the head, or of a shoulder, or of a buttock. There have

been various explanations advanced, most of them more or less unsatisfactory. For instance, Baudelocque and his followers taught that the anterior and the posterior inclined planes of the ischia determined the anterior or the posterior rotation of the lowest portion of the presenting part. Naegele, however, pointed out the fallacy of this explanation; for, contrary to Baudelocque, he demonstrated that the occiput rotates anteriorly even when it is originally situated on a posterior inclined plane. Cazeaux would have us explain the rotation upon mathematical and mechanical principles; but, without going into the matter, suffice it to say that while they beautifully explain the cause of anterior rotation in anterior positions, yet they are absolutely insufficient to account for the anterior rotation in originally posterior positions. Tyler Smith, Leishman, and Playfair, as we are aware, teach that the anterior rotation is determined by the ischial spines, and while here again the explanation fully accounts for the anterior rotation in anterior positions, we are unable to understand how they produce anterior rotation in the third and fourth positions of the vertex. It was not until Paul Dubois performed his experiments upon the cadaver that we find anything like a satisfactory explanation for anterior rotation of the lowest portion of the presenting part under all circumstances. Dubois's experiments consisted in pushing fœtal cadavers of various sizes through the birth canal of puerperæ recently dead, and he found that, no matter in what position he placed the vertex, whether to the front or to the rear, anterior rotation of the vertex occurred as soon as it reached the pelvic floor; but there came a time in his experiments when anterior rotation completely failed and the long diameter of the presenting part would remain in the same diameter of the pelvis in which it entered.

Recently, through the courtesy of the coroner, I was en-

abled to perform similar experiments here at the University Medical College. A German girl, twenty years of age, was found one morning upon the floor of her employer's store dead from post-partum hæmorrhage. One twin had been born, and when the cadaver was turned over to me the second twin and the double placenta I found within the uterine cavity. The twin born spontaneously was of such a size as to dilate the passages to a very small extent and to cause no appreciable laceration whatsoever. Into the head of a fœtal cadaver at a point half an inch posterior to the small fontanelle I fastened this swivel, and, having well lubricated it, I attached to the ring of the swivel this whipcord. Then opening the abdomen and uterus of the unfortunate woman, by means of a uterine dressing-forceps I passed the cord attached to the swivel down through the cervix, vagina, and out at the vulva. Then I commenced my experiments. I placed this fœtus in its normal attitude within the uterus, first in the L. O. A., then in the R. O. A. position, and each time upon making traction upon the cord through the vagina, and always in the axis of that part of the parturient canal in which the presenting part rested, I found that as the head approached the pelvic floor internal rotation of the head took place completely, so that the sagittal suture would appear exactly in the antero-posterior diameter of the outlet. In watching for the internal rotation of the shoulders, I found that while in the first two experiments internal rotation was complete, yet in the subsequent ones the rotation became less and less marked, until finally there was no attempt at rotation whatsoever on the part of the shoulders. I placed the fœtus in the third and in the fourth positions in its normal attitude at the pelvic brim; and here again, upon making traction from below, anterior rotation occurred in the former instance about the right side of the pelvis, and in the latter

about the left side, until the sagittal suture once more was brought into the antero-posterior diameter of the pelvic outlet and the small fontanelle just under the pubic arch.

Still another test I made: The vertex was placed directly posterior and just under the promontory of the sacrum, and, upon making traction and drawing the occiput to the pelvic floor, we found that, instead of remaining permanently at the rear, after a few seconds anterior rotation on the part of the occiput commenced, and once more we found the vertex at the pubes.

A second time anterior rotation was secured in the R. O. P. and in the L. O. P. position, and then the occiput was placed once more in the hollow of the sacrum to test this position further, and it was found that, in spite of the strongest traction we were able to make on the cord through the vulva, the vertex remained firmly and permanently in the hollow of the sacrum.

The same result followed experiments in other oblique and transverse positions—namely, anterior rotation of the occiput failed and the sagittal suture appeared at the outlet in almost the same diameter in which it was originally placed at the inlet, thus proving that some factor in the causation of anterior rotation of our first experiments failed us, or performed its duty imperfectly, in the subsequent ones.

We may draw our own conclusions as regards these experiments. If anterior rotation in any position is caused by the ischial planes or spines, then why was it, in the experiments that I have just cited, rotation of the presenting part failed after the fœtus had been drawn a certain number of times through the pelvis? If the rotation is due to the inclination of the pelvis, as was maintained by Tarnier, or to the shape of the fœtal head, as was taught by Pajot, or to the ischial planes or spines, why should the rotation fail

when no evident change took place in the shape of the child's head in the inclination of the mother's pelvis, or in the ischial planes or spines? We are pretty safe in stating, then, that the main and determining cause of the rotation of the lowest portion of the presenting part is the resistance of the posterior portion of the pelvic floor, and more particularly of the two levator ani muscles which have been so beautifully dissected out and illustrated by Dr. Dickinson, of Brooklyn. When they lost their resistance and became relaxed in the cadaver, as the result of repeated trials with the fœtus and swiveled string, anterior rotation failed to occur. It is undoubtedly the fact that it is not one factor alone, but several that determine this internal rotation. Accommodation; adaptation; the great principle that runs through all the mechanism of labor, whereby the long diameter of the presenting part adapts itself to the long diameter of that part of the pelvis in which it may find itself; this corkscrew-like arrangement of the pelvis; the lessened resistance caused by the urethral and vaginal orifices in front; *the greater resistance of the thicker and heavier tissues in the posterior half of the pelvis;* the inclination of the pelvis; the shape of the child's head; the inclination of the uterus causing the anterior portion of the presenting part to reach the pelvic floor first—all play their part in the causation of anterior rotation.

Having understood this, then, the remaining stages are readily comprehended. Rotation being complete, there comes a time when the occiput, having passed under the subpubic ligament and being partially born, the shoulders attempt to enter the pelvis with the head; and as under ordinary circumstances there is not sufficient room for both, the head escapes from the vulva by a movement of extension, thereby leaving the pelvis free for the shoulders to enter. We say the head escapes by a movement of exten-

sion. This is not strictly true, for repeated observations have convinced me that the bulk of the head, including the occiput, is born before the chin leaves the sternum—a fact we must always remember in our attempts at perineal protection and forceps delivery. This escape of the head is caused by the force of uterine contraction acting through the spinal column and by the contraction of the muscles that go to make up the pelvic floor, and we see the beautiful provision of Nature that has caused only the smallest diameter—namely, the suboccipito-bregmatic, three and a half inches in length—to be passed through the birth canal. And even at the vulva, as we can readily appreciate from the manikin, the occiput having been born first, all the diameters of the fœtal head that pass in succession through the vulvar opening are measured, not from the occipital protuberance, but from a point midway between it and the foramen magnum, and are consequently the smallest or the suboccipital diameters.

The first part now is born and it only remains to follow the mechanism of the second part, and we have completed the mechanism of labor in the first position. The shoulders, we have every reason to believe, enter the pelvic inlet in the opposite oblique to the one in which the head entered; or, if the head entered in a transverse diameter, it is possible in a roomy pelvis, and with a child that is not too large, for the shoulders to enter in the opposite diameter or in the antero posterior diameter of the inlet. At all events, we usually find the shoulders first in an oblique diameter, and, as we have learned, the anterior portion of the presenting part, because of the direction of the axis of the superior strait, is lower than is the posterior; consequently it is this part that first reaches and is first influenced by the resistance at the floor of the pelvis and is deflected anteriorly to the pubic arch. If both shoulders came to the

pelvic floor at one and the same time, we have every reason to believe that they would both be equally influenced by the factors causing anterior rotation, and consequently the bisacromion diameter would remain in the same diameter in which it entered the pelvic inlet. Investigation has taught me that while complete anterior rotation of the head is the rule, yet complete rotation of the shoulders is not by any means so constant as is that of the head. Even before the shoulders begin to rotate internally we see an unwinding, as it were, of the muscles of the neck that have been twisted in the internal rotation of the fœtal head, and, as a consequence, the head makes a partial movement of external rotation, and this first partial movement of rotation is termed restitution. Now, a glance only at the manikin will show us that when the shoulders rotate within the pelvis there must in consequence be a decided rotation on the part of the head which is already delivered, and this further and more marked rotation of the head is termed the external rotation of the head that you are familiar with, whereby the face of the child looks almost directly to the inner surface of the right thigh of its mother.

We have now followed the bisacromion diameter into the antero-posterior diameter of the pelvic outlet, and if we have observed our cases of labor in the tenement houses carefully, we shall remember that in most instances the anterior shoulder was the one that first appeared at the vulva; and if we are close observers, we shall further remember that sometimes it was this anterior or right shoulder that first was fully born, and in other instances it was the posterior or left shoulder and arm that were born first, and circumstances seem to determine whether it shall be the anterior or the posterior arm that is first expelled. In a multipara, particularly if her parts are roomy, if her perinæum has been partially destroyed at a previous confinement, the

posterior shoulder and arm are very apt to be the first born; whereas, on the other hand—and we are speaking, you understand, of spontaneous delivery where we do not interfere with the birth of the shoulders—if the case is one of a primipara with perinæum intact and with somewhat rigid soft parts, it may be the anterior shoulder and arm that are first brought into the world. So the shoulders are born; the body usually follows immediately afterward. Some obstetricians would speak of a stage of rotation of the buttocks, but we have every reason to believe that when the shoulders rotate the buttocks rotate with them, and consequently there is little or no torsion of the body, but the buttocks come down and are expelled in the antero-posterior diameter of the outlet in practically the same way as are the shoulders.

Let us now describe the mechanism of the third or R. O. P. position, and this will be sufficient to illustrate the mechanism in all posterior positions of the vertex. The suboccipito-bregmatic diameter in this instance, as you see in this pelvis, enters the inlet in the right oblique or perhaps in the transverse diameter; of course we presuppose that flexion and molding have taken place. Following engagement we have descent—descent in some cases until the pelvic floor is reached—before any rotation in either direction takes place; and yet we will observe cases where anterior rotation of this vertex occurs before the pelvic floor is reached, and in these instances we have every reason to believe that it is the resistance of the posterior wall of the uterus or of the rectovaginal sæptum that determines this rotation. When once the vertex has reached the pelvic floor the case may terminate in one of four ways, and, stating them in the order of their frequency, they are as follows: First, complete anterior rotation of the occiput about the right half of the pelvis until the pubes is reached;

second, posterior rotation of the vertex into the hollow of the sacrum and birth of the head with the occiput to the rear by extension over the perinæum; third, posterior rotation and impaction; and fourth, the conversion of the vertex presentation into one of face presentation; and although this latter termination is extremely rare, yet, as there are some half a dozen cases on record, we are compelled to recognize its possibility.

1. It is needless for us to spend any time in a description of the first method of termination; the same principles apply here as apply in the first and second positions. The increased resistance of the posterior inclined plane of the pelvis causes the occiput to be deflected in the direction of least resistance—namely, to the vulvar orifice.

2. We see instances, however, where from some cause—it may be the roominess of the pelvis; the smallness of the child; want of rigidity of the pelvic floor from numerous labors or from other causes; rupture of the floor; distention of the floor by the passage of the first twin; incomplete flexion of the head, permitting the sinciput to be as low or lower than the occiput—this anterior rotation fails. According to authorities it is a rare condition, yet according to Naegele's statistics it occurred once in seventy-three cases of labor. Should, then, anterior rotation fail and the occiput remain in the posterior half of the pelvis, it is possible, under certain conditions, for the occiput to follow the posterior wall of the parturient canal and be born by extension over the edge of the perinæum. Labor then is almost always prolonged and in some instances impossible as the result of impaction. The cause of the prolongation of the labor under such circumstances was first pointed out by P. Dubois, and by reference to this diagram that hangs before us and to this fœtal cadaver which I hold up in my hand, we can readily see how it is that the labor is either exceed-

ingly tedious and prolonged or absolutely impossible. Glance at the back of a child's neck, and we see that it is not much over two inches in length; observe the posterior wall of the parturient canal from the promontory of the sacrum to the edge of the perinæum, and we readily see that the distance is in the neighborhood of ten inches, counting five inches from the promontory to the tip of the coccyx and five more from the tip of the coccyx to the edge of the distended pelvic floor. If an anterior position of the vertex obtains, birth of the head is readily and easily accomplished, for the two inches of the back of the neck without any difficulty pass over the inch and a half of the anterior pelvic wall measured at the symphysis, and the head is born before the shoulders necessarily enter the pelvic inlet. How different when the reverse obtains! For the head to be born in an occipito-posterior position we may hope for no break in the straight or rigid branch that the fœtus represents until the head, together with the neck, has traversed the ten inches of the posterior pelvic and perineal wall, and the head is finally permitted to be born by extension over the perinæum.

Delivery under such circumstances is certainly possible by the natural forces, and some of you, to my certain knowledge, have seen such instances in your service in the New York Lying-in Hospital, and you will recall how, after an exceedingly tedious labor and extreme flexion of the head on the sternum and with the occiput distending the pelvic floor for perhaps several hours, finally, with tremendous bearing-down efforts on the part of the parturient, the occiput was enabled to climb up, as it were, over the perinæum, the forehead and face appeared under the pubes, the perinæum slipped by the occiput and along the neck of the child, and extension completed the birth of the head.

3. But, unfortunately, we occasionally meet with in-

stances in our practice where either anterior rotation of the occiput or spontaneous delivery with the occiput to the rear absolutely fails to occur. And then, if we have added to this an impaction and swelling of the shoulders that have partially entered the pelvic cavity, we have one of those tragedies of midwifery practice which I trust you may never be called upon to face. Given a normal-sized fœtus, a pelvis of ordinary dimensions in perhaps a primipara with rigid soft parts, and the cause of the impaction of those cases of occipito-posterior position that have been improperly treated early in the second stage of labor is easily understood. Once more I must ask your attention to this diagram and to the fœtal cadaver which I hold up before you. The occiput passes into the hollow of the sacrum, reaches the coccyx perchance, but still is several inches from the edge of the perinæum—what must, what only can happen under the given circumstances? Why, the body of the child must enter the pelvic cavity together with the head in order to allow of the occiput's reaching its ultimate goal. Then why do we have impaction? We have impaction because the dorso-sternal diameter (four inches) is added, as you see, to the fronto mental diameter (three inches and a half), giving us an antero-posterior diameter of the fœtal mass of seven inches and a half that the uterine forces are attempting to drive through a pelvis the average diameter of which is usually considered to be not more than four inches and three quarters. And this is not all; as has been pointed out, the length of the fœtal ellipse when the child is in its normal attitude is half the length of the entire fœtus—namely, about eleven inches; consequently, when the occiput has come up to the edge of the perinæum the breech of the child has practically entered the inlet of the pelvis, and the uterus under such circumstances can not but act at a disadvantage. We can readily see, then, what either spontaneous or arti-

ficial birth of the fœtus means to the mother—almost invariably a partial or complete loss of her perineal structures. I have only recently been requested to see a puerperal woman suffering from sepsis, where the forceps had been applied under the conditions that we have just named, and the forceps delivery had resulted in an entire loss of the woman's perinæum and an inch and a half of the recto vaginal sæptum.

4. The fourth manner in which this posterior position may terminate is for the occiput in some way to become arrested in its course, and then, the chin leaving the sternum, rotation on a biparietal diameter takes place, the head, as it were, turns a somersault, becomes extended within the pelvic cavity, and we have resulting a face presentation of the mento anterior variety. This is all that we shall say concerning the mechanism of vertex presentation until we speak of the management of the same.

Diagnosis of Vertex Presentation.—We are now in a position to consider the diagnosis of vertex presentation, and we are here called upon to make the diagnosis, first, during pregnancy; secondly, during labor; and thirdly, after labor has been completed. The diagnosis of vertex presentation during pregnancy or before the os is sufficiently dilated to permit of our distinguishing sutures or fontanelles or the character of the presenting part is made almost entirely by what is known as external or abdominal palpation. Let me say here that the subject of abdominal palpation is one that we can not become too familiar with and one that we can not practice too often. There are those who maintain that if we could do away with all personal contact (by that we mean all internal examination or the use of instruments or catheters) we could absolutely do away with that scourge of former years—namely, puerperal septicæmia. In fact, Leopold, of Dresden, professes to have demonstrated by sta-

tistics—and statistics do occasionally prove something—that in proportion as the number of vaginal examinations diminishes, the percentage of fever-free convalescences increases. Such an assertion of necessity implies that there is no such thing as self-infection in the puerperal woman, that the cause of the infection resides not in the patient herself but in her attendants. And while we are not ready as yet to do away entirely with vaginal examinations during labor, still our aim should be to make these examinations as infrequently as an intelligent management of the case will permit.

1. [In the lecture as delivered the author proceeded as follows]: "In order to illustrate more clearly how abdominal palpation should be conducted, I have had one of my patients brought over from the Emergency Lying-in Hospital who is a primipara and within two weeks of full term. The patient, as you see, is placed upon a hard examining table, with her clothes so loosened and arranged that we may readily examine the abdomen from the hips to the free border of the ribs; and then, to render the anterior abdominal walls as lax as possible, we have the woman flex her thighs somewhat. As you see, I take my stand at the woman's right and facing her. I place the palms of my hands over the lower part of the uterus so that the finger-tips meet in the median line, and then, by passing them gently upward, all the time carefully manipulating the uterine contents, we determine whether the long axis of the child lies vertically or obliquely in the uterus, whether the head or breech occupies the fundus, and something regarding the size of the fœtus. Having determined that the child lies vertically, that the breech and not the head occupies the fundus, and that the fundus reaches nearly to the ensiform cartilage, we next seek by another manipulation the position of the small parts and the dorsal plane of the fœtus. To do this the

hands are separated and are placed flat, one on each side of the fundus of the uterus. Then, by passing the contained fœtus gently from hand to hand, we determine to which side lies the smooth hard plane of the back, and in which side lie the irregular, movable small parts. We may greatly aid our endeavors by pushing the fœtus with one hand firmly up against the palm of the other, thus dislodging the liquor amnii, which may interfere with our palpating. So far we have learned that the head presents, that the back of the child looks to the left of its mother, and that the small parts—namely, the feet—lie to the right in the fundus uteri. The next question to be decided is, Is the head, which we can now feel in the lower part of the uterus, engaged? To determine this we separate the thumb and fingers of either hand as widely as possible, and with the tips of the thumb and middle finger we attempt to seize the presenting part just above the pubes in this manner. Were this woman a multipara, in all probability we could move the head readily from side to side by this means; but we find when we grasp what appears to be the head just at the pelvic inlet that we are unable to move it from side to side, or, in other words, the head, as is usually the case in a primipara, is engaged in the entrance of the pelvis. Now, to determine the amount of this engagement, we take another position—namely, with our back to the face of the patient. Then, with the tips of the fingers of both hands, we slowly and gradually follow the lower part of the fœtus as deeply along the sides of the pelvis as we are able; and you see, by exerting no sudden or jerking movements, after we have partially overcome the resistance of the muscles, that we may pass our fingers to a considerable extent into the pelvis of this gravid woman, and we determine that the head, which we can now distinctly feel, has descended somewhat in the pelvic cavity. Now, what

have we determined so far? We have a cephalic presentation, with the back of the child pointing to the left of the mother; and if, moreover, we make use of the stethoscope and find that the fœtal heart sounds are most distinct at a point midway between the left anterior superior spine of the ilium and the umbilicus, and if by this last manipulation of forcing the finger-tips alongside of the head into the pelvic cavity we feel certain there is no extension of the head, we have every reason to believe, without any internal examination whatsoever, that we have a vertex presentation to deal with, and that the position is or will be the left occipito-anterior."

2. Such abdominal palpation may be carried out, as you have seen me perform it upon this gravid woman, just as well during labor, in the intervals between the pains, as in pregnancy, and while I would not advise you to do away entirely with internal examination during parturition, yet in most instances one examination at the beginning of the first stage, to corroborate our external examination and to determine the condition of the cervix, membranes, and pelvis, and one when the membranes rupture, to satisfy ourselves that there is no prolapse of the cord or an arm, and that the presentation and position are normal, will be, in most instances, quite sufficient. When labor has far enough advanced for us to palpate the vault of the skull, the diagnosis of vertex positions is made from the position and character of the fontanelles and sutures which we are enabled to palpate, and which we become sufficiently familiar with in our biweekly practice with the manikins and in the tenement-house service.

3. After labor is completed we are sometimes called upon, for medico-legal purposes, to express an opinion regarding the presentation in which the child was born. To illustrate this point I have had sent over to-day from the

morgue the cadavers of three still-born children, and we notice several points of interest about the conformation of their heads. We usually rely upon two points in making the diagnosis of the presentation after delivery. The first of these is the shape of the child's head, and the second is the position of the caput succedaneum. Where labor has been rapid, where there has been no caput formed, and where there has been little or no molding of the child's head, as was undoubtedly the case in this cadaver which I hold up, there is absolutely nothing by which we may be enabled to express a positive opinion; and we may say just here that there is nothing in any case in the genital canal of the woman to aid us in making our diagnosis. But when we select this second cadaver we find that the shape of the child's head is distinctly different from the first. On examining it closely, we find that the diameters of the fœtal head have been extensively changed from the normal as the result of the resistance and pressure within the parturient canal. You see as we measure them that there is a distinct diminution of the suboccipito-bregmatic, of the occipito-frontal, and the bitemporal diameters, and that there is a compensatory increase in the diameter running from the chin to a point in the vertex situated between the apex of the occipital bone and the large fontanelle. This molding of the head, of course, is rendered possible by the approximating and overlapping of the bones at the sutures and fontanelles, and this particular shape of the head that we have in this fœtus is always characteristic of a vertex presentation and an anterior position, and we still further strengthen our opinion by finding that the caput succedaneum is situated along the inner posterior border of the right parietal bone. And, moreover, in this instance we may distinctly see the ecchymotic spots left by the blades of the forceps that were evidently applied over the occipito-mental cir-

cumference of the head. We take up another fœtal cadaver, and while there is in this instance a somewhat characteristic molding of the head, still it is much less marked than in the second case, and upon a superficial examination we are unable to find anything that resembles a caput succedaneum. But, by incising the scalp from the root of the nose to the posterior extremity of the sagittal suture and pulling back the scalp from the cranium, we find that the tissues that cover the inner and posterior portion of the right parietal bone appear somewhat more tumefied and certainly contain more serum than the corresponding region on the left parietal bone, and hence the diagnosis of vertex presentation is, to say the least, probable.

REASONS WHY

Physicians should Subscribe

— FOR —

The New York Medical Journal,

EDITED BY FRANK P. FOSTER, M. D.,

Published by D. APPLETON & CO., 1, 3, & 5 Bond St.

1. BECAUSE: It is the *LEADING JOURNAL* of America, and contains more reading-matter than any other journal of its class.
2. BECAUSE: It is the exponent of the most advanced scientific medical thought.
3. BECAUSE: Its contributors are among the most learned medical men of this country.
4. BECAUSE: Its "Original Articles" are the results of scientific observation and research, and are of infinite practical value to the general practitioner.
5. BECAUSE: The "Reports on the Progress of Medicine," which are published from time to time, contain the most recent discoveries in the various departments of medicine, and are written by practitioners especially qualified for the purpose.
6. BECAUSE: The column devoted in each number to "Therapeutical Notes" contains a *résumé* of the practical application of the most recent therapeutic novelties.
7. BECAUSE: The Society Proceedings, of which each number contains one or more, are reports of the practical experience of prominent physicians who thus give to the profession the results of certain modes of treatment in given cases.
8. BECAUSE: The Editorial Columns are controlled only by the desire to promote the welfare, honor, and advancement of the science of medicine, as viewed from a standpoint looking to the best interests of the profession.
9. BECAUSE: Nothing is admitted to its columns that has not some bearing on medicine, or is not possessed of some practical value.
10. BECAUSE: It is published solely in the interests of medicine, and for the upholding of the elevated position occupied by the profession of America.

Subscription Price, $5.00 per Annum. Volumes begin in January and July.